Methods: We design two-phase prospective intervention study in public 1800-bed medical center in Taipei, Taiwan. Cleaning efficacy was monitored by ATP bioluminescence after the daily morning cleaning program completed in a CICU and a MICU. The following high-touch surfaces were monitored: bed rails, surfaces of vital monitors, intravenous injection sets, bed tables, and handles of the nursing care cart. The threshold for cleanliness was set at a level of 250 relative light units (RLU). The intervention included an infection control education program, use of disposable wipes rather than a reusable microfiber towel, and feedback the monitoring result.
Results: In phase I, only 43.9% of surfaces were clean (RLU $<$ 250) after the daily cleaning process, and some of the surfaces were even more contaminated. In phase II, 88.1% of surfaces were clean after the daily cleaning process, significantly from phase I. The infection rate also declined after the intervention, from 21.0‰ to 10.7‰ in the MICU ($p = 0.047$) and from 15.6‰ to5.6‰ in the CICU ($p = 0.028$).
Conclusions: Implementation of a new cleaning program that included use of disposable wipes and monitoring by ATP levels significantly reduced contamination of surfaces and infection rate in our ICUs.

PS 1-154

INVERSE ASSOCIATION OF β-LACTAM-RESISTANT *HAEMOPHILUS INFLUENZAE* WITH ADENOID BIOFILM FORMATION IN PATIENTS WITH ADENOIDECTOMY SURGERY

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Purpose: Chronic adenoid infection by β-lactam-resistant *Haemophilus influenzae* type b (Hib) and biofilm formation contribute to adenoid hyperplasia. Middle ear disease consequently remains a critical issue in the pediatric population. The aim of this study was to investigate the correlation of Hib biofilm formation with middle ear effusion with adenoid hyperplasia (MEE-AH) and with pediatric obstructive sleep apnea (OSA).
Methods: A total of 384 patients with adenoidectomy from January 2008 to December 2012 were recruited in this investigation. Thirty-two patients (14 female and 18 male; age, 4—13 years) who obtained routine adenoidectomy surgery had Hib-positive cultures were enrolled in a retrospective manner. By using polysomnography, 18 patients were diagnosed as having MEE-AH with chronic adenotonsillitis, and 14 patients were diagnosed as having pediatric OSA. The results of the Hib biofilm, antibiotic resistance profiles, and scanning electron microscopy observation, which correlated with the clinical diagnosis, were analyzed by the chi-square test and Fisher's exact test.
Results: Biofilm formation by Hib was significantly present in the patients with MEE-AH rather than patients with OSA. β-lactam-sensitive Hib were resistant to augmentin because of the adenoid biofilm formation. However, this finding was uncommon in the pediatric OSA group.
Conclusions: Properly treating β-lactam-sensitive Hib infection to prevent biofilm formation could be an important issue in reducing MEE-AH and adenoid vegetation in the pediatric population.

PS 1-155

EFFICACY OF SAFETY-ENGINEERED DEVICE IMPLEMENTATION IN THE PREVENTION OF PERCUTANEOUS INJURIES AT A MEDICAL CENTER IN TAIWAN

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Purpose: Health care workers (HCWs) are exposed to blood borne pathogens through occupational injuries, and the replacement of sharps by safety-engineered devices has been recommended as a key preventive measure. To determine the benefits and harms of safety medical devices aiming to prevent percutaneous exposure injuries (PEIs) caused by needles in HCWs.
Methods: This was a comparative study with before-and-after intervention evaluation in a 2,700-bed medical center during a 10-month period were included. The study was divided into the baseline period (Phase 1) and the intervention period (Phase 2). In Phase 1, active surveillance was performed. In Phase 2, we implemented a program for the use of engineered devices to prevent PEIs and following procedures: IV delivery-insertion, blood collection, finger-stick blood sampling, and intramuscular-subcutaneous injection. The HCWs that participated in the intervention received a training session with the devices. The rates of PEIs obtained in Phase 1 were compared with the rates obtained in Phase 2, after interventions were implemented.
Results : Between the two periods, the proportion of needles seen in the containers that had been recapped was reduced from 8.3 to 3.5 per 1,000 fulltime—equivalent employees post intervention (P$<$.05). Specifically, the incidence of percutaneous injuries resulting from finger-stick blood sampling decreased significantly (P$<$.01). Injury rates involving hollow-bore needles also decreased (P$<$.05).
Conclusions: Our study shows that proper use of safety-engineered devices to prevent PEIs. Incorrect behavior is a recognized risk factor for PEIs that is related not only to lack of knowledge but also to poor organizational climate and heavy workloads at the staff institution. However, training and education must accompany any intervention.

PS 1-156

ASSOCIATION BETWEEN HOSPITAL SAFETY CLIMATE AND HEALTH CARE WORKERS' KNOWLEDGE, ATTITUDE, AND PRACTICE TOWARD SHARPS INJURIES, AND BLOOD AND BODY FLUID EXPOSURE

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Purpose: The purpose of this research is to understand the situation of and association between hospital climate and the knowledge, attitude, and handling of piercing injuries and blood and bodily fluid exposure by health care staff.
Methods: A cross-sectional study used sampling to select staff from seven regional or higher level hospitals in northern Taiwan who were at risk from sharps injuries or exposure to blood/bodily fluids. Research was primarily conducted through self-administered surveys, with a total of 1465 issued and 996 received, recovery rate was 67.9%. Data was analyzed using SPSS 12.0, a statistics software program.
Results: 1.Health care staff's feeling about hospital safety was affected by factors such as hospital level, age, educational level, and job title.
2.Knowledge, attitude, and handling of piercing injuries and exposure to blood/bodily fluids among health care workers is associated with and influenced by how they feel about hospital safety. A better knowledge of piercing injuries and blood/bodily fluid exposure corresponded to higher awareness of the importance of reporting incidents and staying alert. On the other hand, those who had trouble with these questions were more likely to display negative handling behavior and have negative feelings about hospital safety. Finally, staff members who felt better about hospital safety were more likely to display positive attitudes and handling behavior.
3. Personal characteristics are a reliable way to predict health care staff's knowledge, attitude, and handling of piercing injuries and blood/bodily fluid exposure. Hospital safety is also a reliable predictor of attitude and behavior.
Conclusions: Hospital safety is the most reliable variable for predicting health care staff's handling of piercing injuries, and it is the most important factor for preventing piercing injuries and exposure to blood/bodily fluids.

PS 1-157

HAND HYGIENE: DREAMS COME TRUE "CLEAN CARE IS SAFER CARE"

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Purpose: Hundreds of millions of patients around the world are affected by health care-associated infections (HCAIs) that are also the most frequent

adverse event in healthcare. Most are preventable through adherence to patient-care-practices. Hand hygiene is the most effective practice in preventing and controlling HCAI as well as community infections.
Clean Your Hands is a major component of the WHO First Global Patient Safety Challenge a global campaign to improve hand hygiene among health-care workers. Since 2008 Hong Kong Infection Control Nurses' Association (HKICNA) has been actively participating in the WHO Clean Hands Saves Lives campaign by various initiatives in different healthcare settings and in the community.
Methods and Results:
From 2008, during the 'World Health Carnival' a special booth has been organised to promote hand hygiene in the community every year. There were over a thousand attendee to participate in hand hygiene education and games annually.
In 2012, Poster design competition was organised to promote hand hygiene among health care workers. The winner posters have been used as talking wall in community and healthcare settings while some were used as design background of promotional gimmicks such as pen, tote bag etc. A hand-held electric fan was designed with visual lit up "hand hygiene" that again helps reminding healthcare workers the importance of hand hygiene.
Two Hand Hygiene Dances were designed to continuously support and promote WHO's initiative on hand hygiene. The two Hand Hygiene Dances demonstrate hand hygiene should start from young children to adulthood, from healthcare worker to different professions in the community. Both versions are highly promoted in hospitals and schools in Hong Kong and assessable in YouTube gaining thousands of 'likes'.
Conclusions: Hong Kong Infection Control Nurses' Association is fully committed in promoting infection prevention and control especially hand hygiene practices in healthcare and community. The endeavour of "Clean Hand Save Lives" will continue.

PS 1-158

FLUOROQUINOLONE PRESCRIBING IN TAIWAN, 2000 TO 2010

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Purpose: The Taiwan Surveillance of Antimicrobial Resistance showed emergence and increasing fluoroquinolone (FQ) resistance in many important pathogens in Taiwan, including *Escherichia coli*, *Streptococcus pneumoniae*, *Haemophilus influenzae*, and other species, which may indicate common selective pressure exerted by increased antibiotic use. This study describes changes in FQ usage in Taiwan.
Methods: This retrospective study determined the prescriptions of FQs from 2000 to 2010 using the sampling database from the National Health Insurance. Prescriptions of amoxicillin were used for comparison. Indications of prescriptions were based on International Classification of Diseases, Ninth Revision, Clinical Modification. The clinical characteristics of patients for whom FQs were prescribed were analyzed. IMS was used to estimate the amount of self-paid or inventory FQs.
Results: Oral FQs in the outpatient department accounted for 84.6% of all FQs prescribed. Compared to oral amoxicillin, the prescription of oral FQs increased in recent years (odds ratio 1.089, 95% confidence interval 1.084-1.094). Non-US FDA indications accounted for 56.5% of all prescriptions. Respiratory tract, urinary tract, intra-abdominal and gastrointestinal infections accounted for 90% of approved indications. The specialties that most FQ prescribing occurred were otorhinolaryngology and family practice. Economic considerations, over the counter use, and treatment guideline recommendations are factors that cannot be included in this model and are our limitations.
Conclusions: FQ resistance occurred concurrent to increased prescription of FQs. Restriction of oral FQ use may be necessary to halt this trend of drug resistance.

PS 1-159

EFFICACY EVALUATION OF AUTOMATIC HYDROGEN PEROXIDE DRY MIST SYSTEM ON HEALTHCARE ENVIRONMENT DISINFECTION

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Purpose: It is important to sufficiently decontaminate the healthcare environment to prevent the spread of drug-resistant bacteria like methicillin-resistant Staphylococcus aureus (MRSA), vancomycin-resistant enterococcus (VRE), gram-negative rods (GNR) and etc. When the environment is polluted with pathogen, it will become the main source of hand transmission and cross-infection of healthcare workers. Traditionally, the decontamination process was done through manually wiping equipment and facilities with bleach in the wards. However, the recurrent outbreaks or group infections suggested that the traditional disinfection protocol may leave some areas untreated. The study therefore is aimed to investigate the decontamination efficacy of automatic hydrogen peroxide (H_2O_2) dry mist after patient's discharge from hospital.
Methods: By replacing traditional bleach cleaning, we used GLOSAIR™ (*Johnson* & *Johnson*) automatic H_2O_2 dry mist to decontaminate the ward after patients discharged from hospital. We collected 10 high touch objects before/after decontamination in the negative pressure isolation intensive care unit (IICU), burn center (BC) and bone marrow transplant ward respectively in a medical center of northern Taiwan.
Results: We performed GLOSAIR™ decontamination for ten cycles in IICU, four cycles in BC and one cycle in bone marrow transplant ward after patient discharged. Culture positive for bacteria before/after decontamination was 80%/6% for IICU, 60%/2.5% for BC, and 80%/0% for bone marrow transplant ward. There were diversified bacteria before decontamination, including MRSA, VRE, *A. baumannii* and etc., only CONS was discovered after decontamination.
Conclusions: According to the results, we concluded that the survival of pathogen was dramatically decreased and only few sample site of CONS were discovered after decontamination of H_2O_2 vapor. Therefore, using automatic H_2O_2 dry mist machine to decontaminate the room was proved to be sufficient.

PS 1-160

EVALUATION OF ANTENATAL GROUP B STREPTOCOCCAL SCREENING

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Purpose: Intrapartum antibiotic prophylaxis (IAP) is highly effective at preventing early-onset Group B Streptococcal (GBS) diseases among infants born to colonized women if all women undergo routine vaginal-rectal screening for GBS colonization at 35-37 weeks' gestation. Therefore, laboratory accurate in-time GBS identification/drug susceptibility reports and a retrospective analysis of each pregnancy could help the clinicians make adequate anti-GBS regiments.
Methods: 1421 clinical specimens (from Oct.,2013 to Oct.,2014) were collected and examined according to the guidelines designated by Taiwan HPA.The maternal colonization rate (by native /foreign/age groups) and drug susceptibility result for GBS isolates were thus analyzed. Besides,266 cases of all have been pregnant 2 times during the past 6 years, the retrospective reviews of previous GBS screening data for each pregnancy were also made to estimate its value in Taiwan.
Results: Total maternal colonization rate of GBS was 22.7%,with 22.6% for native, and 25.0% for foreign group respectively. The age range of women was 17 to 47.Four age groups were categorized and showed with respective isolation rate as followed: 17-20 yr (25.0%)、21-30 yr (20.5%)、31-40 yr (23.3%) and 41-47yr (27.0%). The drug-susceptibility rate of 321 GBS strains was as below: Penicillin(99.4%)、Ampicillin(99.7%)、Vancomycin (100%) 、Erythromycin (53.9%) and Clindamycin(50.2%). The retrospective survey among 266 subjects showed culture rate: constant negative (62.8%),positive conversion (14.7%), constant positive (8.3%),and negative conversion (14.3%) between 2 pregnancies; indicating 63.3% mothers who tested positive for GBS during previous pregnancy might test negative in current pregnancy.
Conclusions: Maternal colonization rate complies with the report (10-30%; CDC), without racial difference. It's probably due to relatively lower immunity to express higher GBS isolation rate for women of the lowest/highest age group. The retrospective analysis and drug susceptibility test imply the necessity of antenatal GBS screening: antibiotic treatment might reduce the chances of developing infections.